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ABSTRACT

Institutional variables are examined in an effort to account for the differences in retention rates at institutions classified as Liberal Arts Colleges II. The four study objectives were to: (1) develop a theoretical model to explain retention rates at different Liberal Arts Colleges II in which the institution is the unit of the analysis, (2) estimate the explanatory power of the model, (3) identify institutional variables important in explaining institutional retention rates, and (4) suggest revisions of the model and identify the implications of the study's findings. One way in which the proposed model differs from the Tinto (1975) and Bean (1983) models is that the institution rather than the student is the unit of analysis. Questionnaires were completed by students at 118 schools meeting the criteria for inclusion in the study. There were 49 items on the questionnaire which asked for such information as enrollment, size of endowment, and tuition. Among the findings are the following: the theoretical model was useful in analyzing the process through which institutional variables affect retention rate; the most important determinant of retention is institutional financial viability; and only five of the theoretical model's 20 variables proved to be major predictors of persistence. Recommendations include further examination of the nature of the relationship between financial viability and retention, and testing the theoretical model with other measures of student retention at other types of institutions. Contains 42 references. (SM)

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Student Retention at Liberal Arts Colleges: The Development and Test of a Model

Robert O. Thomas

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This paper was presented at the annual meeting of the Association for the Study of Higher Education held at the Adam's Mark Hotel in St. Louis, Missouri, November 3-6, 1988. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

Introduction

The decade of 1960 to 1970 was a significant period of development for American higher education (Carnegie Council, 1980). But the years between 1970 and 1980 were more difficult for many American colleges and universities. The Carnegie Council (1980) depicted it as a period of decelerated growth. As inflation rose, operating costs at colleges and universities increased dramatically (Boulding, 1975; Lanier & Anderson, 1975). Simultaneously, enrollment growth leveled off and in the case of some institutions enrollment even declined (National Center for Educational Statistics [NCES], 1975; Baldridge, Curtis, Ecker & Riley, 1978). The combination of rising operating costs and stable or declining enrollments created serious financial problems for many colleges and universities. Added to these difficulties has been a significant change in the number of 18 to 22 year old American men and women, the primary source of college students ("Changing Numbers," 1980).

Particularly vulnerable in an era of stable and declining enrollments and rising operating costs are what Baldridge et al. (1978) and the Carnegie Council (1980) label respectively "private liberal arts colleges" and "liberal arts colleges II." Pressured by spiraling costs and typically modest endowments, they have been forced to charge ever higher tuition rates. Furthermore, they lack the academic reputation and notoriety of more prestigious institutions, qualities that are helpful in attracting students. Different researchers have reported that many of these institutions have suffered from declining enrollments and weakening financial conditions in the past 10 years (Carnegie Council, 1980; Baldridge, Kemerer, & Green, 1982).

Many of the liberal arts colleges II have made efforts in recent years to maintain or even increase their enrollments (Baldridge et al., 1982; American College Testing Program [ACT], 1986). One method of accomplishing this task is to improve student retention rates (Noel, Levitz, & Saluri, 1985).

The focus of student retention studies has nearly always been the student. Researchers have attempted to identify student variables which would enable them to predict which individuals were most likely to drop out of school or persist (Pantages & Creedon, 1978; Beal & Noel, 1980; Beal & Pascarella, 1982; Lenning, 1982). Moreover, several researchers (Spady, 1970; Tinto, 1975; Pascarella, 1980; Bean, 1980, 1983) posed theories in the past 15 years that sought to explain the interaction of student and institutional variables that lead to student persistence or withdrawal. Their unit of analysis was also the student.

Several researchers have called for more research to be conducted in which institutional characteristics and behaviors, rather than those of students, are the foci of inquiry into the correlates of student attrition (Pantages & Creedon, 1978; Beal & Noel, 1980; Beal & Pascarella, 1982; Lenning, 1982; Mattox, 1983; Noel, 1984). There are, however, no existing theoretical frameworks that can guide an inquiry into the relationship between institutional characteristics and practices and retention in which the institution is the unit of analysis.

In contrast to previous studies of student attrition, this study focused upon institutional rather than student variables in an effort to account for the variance in retention rates at liberal arts colleges II. The purpose of this study was divided into four objectives:

1. Develop a theoretical model that is designed to explain retention rates at different liberal arts colleges II in which the institution is the unit of the analysis.
2. Estimate the explanatory power of the model using a sample of liberal arts colleges II.
3. Identify institutional variables that are most important in explaining institutional retention rates.
4. Suggest revisions of the model and identify the implications of the study's findings.

The Theoretical Model of Student Retention

There have been few studies of attrition in which the institution was the focus of the inquiry and there are no existing theoretical models designed to explain how institutional variables affect retention (Beal & Pascarella, 1982; Lenning, 1982; Mattox, 1983; Noel, 1985). In developing such a model, the researcher had to turn first, therefore, to two existing models in which the student is the unit of analysis and which are designed to explain why he/she is likely to withdraw from a particular institution (Tinto, 1975; Bean, 1983). These models explain how a student's interaction with the institution affects his/her decision to withdraw from school. The explanations have implications for institutional practices which can increase the retention of students. These implications were the starting points for developing a model in which the institution is the unit of analysis.

Both Tinto (1975) and Bean (1983) argued that the degree to which students become integrated into the academic and social systems of colleges affects their decision to persist or withdraw from school. This contention provided a starting point for developing a model that explains an institution's retention rate as a function of institutional variables. It clearly suggests

that the more an institution facilitates the interaction of its students with its academic and social systems, the more likely it is the students will be inclined to remain at that school.

The model for this study was designed to explain the retention rate of undergraduate students at liberal arts colleges II. It focuses on institutional rather than student variables and seeks to explain undergraduate student retention in terms of institutional instead of student behavior. The unit of analysis, then, is the institution and the dependent variable the model explains is the retention rate of an institution.

Specifically, the model includes institutional activities that relate to the recruitment and selection of undergraduate students and thus draws from Tinto's position that a student's background characteristics ultimately have some effect upon his/her decision to withdraw from school. It also includes analogous counterparts to Tinto's and Bean's concepts of a student's interaction with an institution and specifies institutional activities that facilitate students' academic and social integration into the life of the institution. In this model, however, students' academic and social integration are unmeasured student outcomes.

One major way in which the proposed model differs from the Tinto (1975) and the Bean (1983) models is that the institution rather than the student is the unit of analysis. The other principal difference is that it includes the school's capacity to financially support some of the institutional activities that affect retention rates. This capacity is referred to as the school's financial viability. Specifically, the model suggests that financial viability increases the capacity and therefore the likelihood of an institution engaging in some of the activities that promote student academic and social integration and ultimately retention. The model also proposes that financial viability of the institution has its own direct effect on retention. The rationale for this assertion is that financial viability can affect students' perceptions of and confidence in the institution and eventually their choice of whether to persist in school. For example, students may have confidence in and feel encouraged to remain at a school that is financially able to maintain or even add to its facilities and/or support or even increase its number of faculty. Conversely, they may lose confidence in and feel discouraged about persisting at a school that is so weak financially it must reduce its number of faculty or defer maintenance of the campus. Financial viability affects the level of student confidence in the institution and this in turn has an affect on retention.

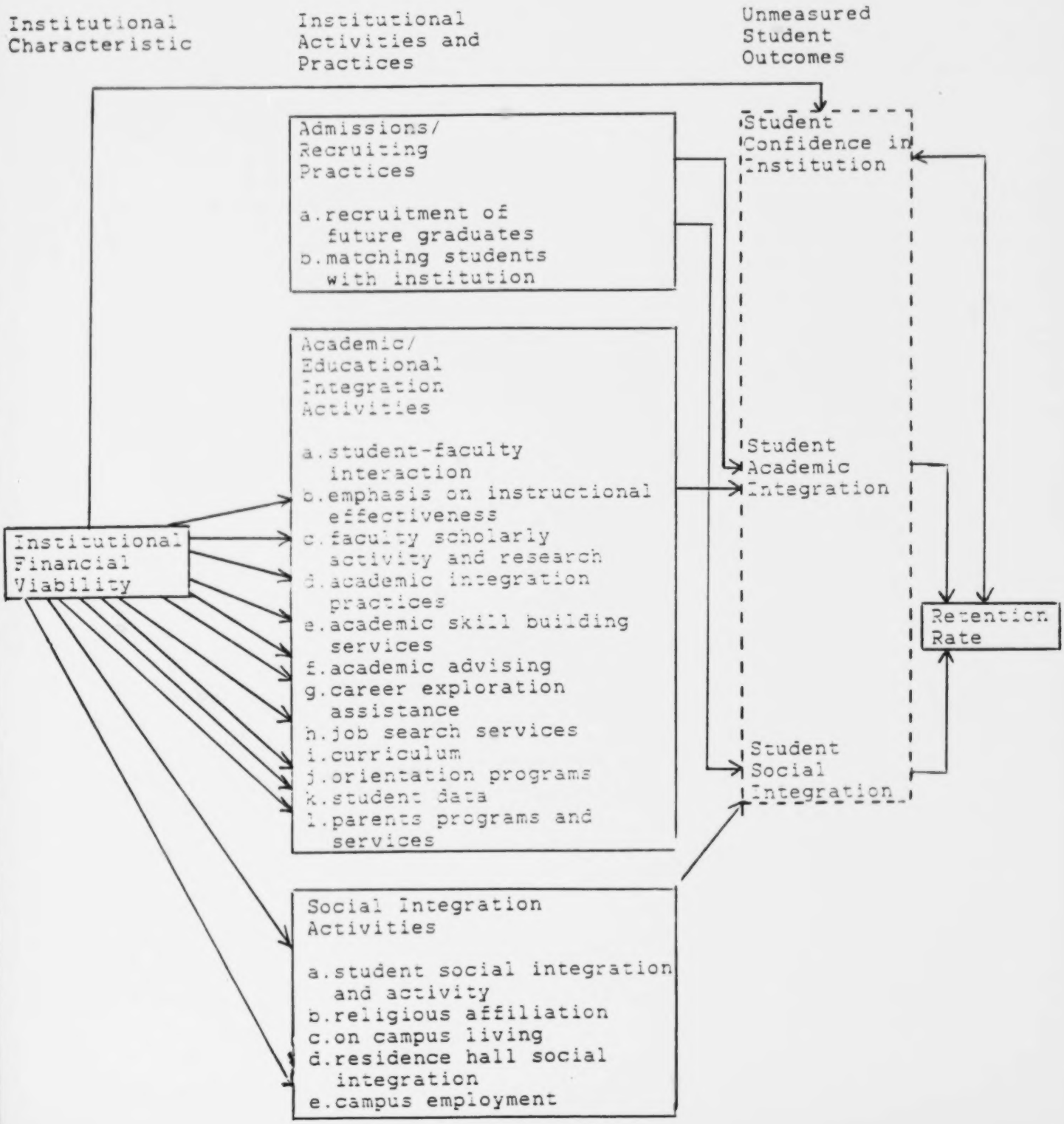
In the proposed model (see Figure 1), the institution engages in three different types of activities that lead to the academic and social integration of students which in turn lead to their retention at the institution. Admissions and recruiting practices can contribute to student academic and social integration by helping to bring to the institution students who are likely to be become involved in the academic and social life of the college. Academic/educational integration activities can facilitate the involvement of students in the institution's academic programs. Social integration activities perform a similar function for student participation in the social life of the college. The financial viability of the institution affects its capacity to support some of its activities in each of the three areas. In Figure 1, arrows are drawn from institutional financial viability to those specific activities. Also, financial viability can affect retention directly by influencing students' confidence in the institution, an unmeasured student outcome and ultimately their decision to remain or withdraw from school. As in Bean's model, the linkages in this model are characterized by one way directional causality.

In this study, the theoretical model was used to explain the freshmen to sophomore retention rate at an institution. The freshmen to sophomore retention rate is defined as the percentage of a school's full-time freshmen who are still enrolled at the same institution on a full-time basis one year after their first enrollment at the school as a freshmen. This particular measure of retention was chosen because the freshmen year is the period during which academic and social integration, precursors of retention in the model, can first take place. The juncture between the freshmen and sophomore years is also the point when the greatest amount of attrition usually occurs.

Previous research in the form of systematic compilations of findings (defined as codifications), reviews of studies and empirical studies on student attrition were the most important sources of knowledge in choosing the constructs and variables for the theoretical model. Recommendations for measures schools can take to improve their retention rates are included in some of the student attrition literature and provided an additional source of information on constructs and variables for the model.

Finally, interviews were conducted with students, faculty and administrators at a liberal arts college II in midwest. This institution had a freshmen to sophomore retention rate above the national average for the two years prior to the beginning of the study. The national average for the freshmen to sophomore retention rate

FIGURE 1. Path diagram for theoretical model as measured by retention rate.



liberal arts colleges II is 70% (NCES, 1985). The focus of these interviews was the respondents' perceptions of what it was about their institution that enabled it to have above average freshmen to sophomore retention rates. The results of these interviews were a second major source of knowledge about institutional characteristics and activities that contribute to retention.

Thomas (1988) reviewed the previous research, recommendations for measures to improve retention rates and the results of the interviews that supported the inclusion of the variables appearing in the theoretical model illustrated in Figure 1. Table 1 lists and defines the model's 20 constructs and the variables that were used to measure them.

Table 1. Institutional Constructs and Variables in the Theoretical Model.

Constructs	Independent Variables Measuring Constructs
1. Institutional Financial Viability-Capacity of institution to financially support its activities.	1. Educational and General Expenditures-Total amount of budgeted expenses for all educational and general purposes in current fiscal year.
2. Recruitment of Future Graduates-Recruitment of student committed to attending the institution.	2. Application Yield-Percentage of students accepted for admission who enroll at institution.
3. Matching Students with School-Institutional efforts to recruit students whose academic and personal backgrounds are compatible with school's programs and values.	3. Alumni Recruiting-Extent to which alumni are involved in recruiting prospective students.
4. Student-Faculty Interaction-Interaction between students and faculty.	4. Student-Faculty Communication-Extent of student-faculty communication in and outside classroom.
5. Emphasis on Instructional Effectiveness-Institutional emphasis on quality of teaching.	5. Faculty Grant Seeking-Extent to which faculty are involved in seeking grants to support teaching or curricular innovations.
6. Faculty Scholarly Activity-Faculty involvement in scholarly activity and research in addition to teaching.	6. Faculty Scholarly Activity-Extent to which faculty are engaged in scholarly activity and research in their disciplines.
7. Academic Integration Practices-Institutional efforts to engage freshmen in their class work.	7. Freshmen Instructors-Extent to which school's more effective instructors teach freshmen classes.
8. Academic Skill Building Services-Institutional services that help students improve their academic skills.	8. Academic Skill Building Services-Extent of institutional services designed to aid students in developing their academic skills (reading, writing, study skills, etc.).
9. Academic Advising-Institutional services to advise students on academic issues.	9. Academic Advising Emphasis-Extent to which school emphasizes academic advising through advisor-advisee contact, training and rewards for faculty who serve as advisors.
10. Career Exploration Assistance-Institutional services to aid students in exploring and choosing among career options.	10. Career Exploration Assistance-Extent to which students use services designed to help them explore and choose among career options.
11. Job Search Services-Institutional efforts to provide students with opportunities to interview with prospective employers and graduate/professional school representatives.	11. Campus Interviews-Extent to which prospective employers and graduate/professional school representatives visit campus to interview students.

Table 1 continued

12. Curriculum-Course distribution requirements for students.	12. Required Core-Percentage of credit hours required of students for graduation that is in core of required courses.
13. Orientation Programs-School efforts to help students become oriented to college life.	13. Orientation-Extent to which freshmen are enrolled in formally organized orientation class.
14. Student Data-Collection and use of data on students and their attitudes toward the institution.	14. Data-Extent to which data on students and their attitudes toward the school are collected and shared with faculty and administrators.
15. Parents Programs and Services-Institutional efforts to facilitate communication and interaction between the school and parents of students.	15. Parent Interaction-Extent to which parents of students and faculty and administrators interact on campus.
16. Student Social Integration and Activity-Institutional efforts to facilitate social integration of students into school's social life.	16. Social Interaction-Extent to which school promotes student social integration through extra-curricular activities.
17. Institutional Religious Affiliation-Relationship of school to church or religious organization.	17. Religious Emphasis-Extent to which school emphasizes religious affiliation by organizing religious activities and enrolling students sympathetic to its religious ties.
18. On Campus Living-Population of students living in campus, fraternity or sorority housing.	18. Residential Campus-Percentage of all students and percentage of freshmen living on campus.
19. Residence Hall Social Integration-School practices that promote student social integration in residence halls.	19. Room Assignments-Extent to which school officials match freshmen with roommates whose interests/backgrounds are similar.
20. Campus Employment-School provided part-time, on campus jobs for students.	20. Employment-Percentage of freshmen who have part-time jobs on campus.

Independent Variable

1. Freshmen to Sophomore Retention Rate-The average of the freshmen to sophomore retention rates between the 1984-'85 and the 1985-'86 school years and between the 1985-'86 and 1986-'87 school years. The freshmen to sophomore retention rate is defined as the percentage of the school's entering freshmen class that is still enrolled at the same institution one year later.

Research Methodology

This study examined the relationship between the characteristics and practices of liberal arts colleges II and their freshmen to sophomore retention rates. Liberal arts colleges II, by definition (Carnegie Council, 1980), have the following characteristics: a) they are privately owned and operated; b) their admissions standards for undergraduate students are not highly selective; c) they have a liberal arts curriculum. Therefore, the schools selected for inclusion in this study's sample were private institutions offering a liberal arts curriculum and having traditional admissions standards (ACT, 1983) for entering undergraduates. The authors also established an upper limit of 5000 for the total enrollment (total number of all undergraduate and graduate students enrolled full and part-time) of schools participating in the study.

There are additional institutional characteristics which could be extraneous or confounding variables affecting the schools' retention rates. It was necessary, therefore, to control the influence of these variables by selecting a homogeneous sample of schools with respect to these characteristics. Control of population homogeneity by selection was accomplished through the use of three additional institutional characteristics. They were: composition of the undergraduate student body with respect to a) gender - only coed institutions were included; b) age- not more than half of the undergraduate student body could be older than 24; c) enrollment status - at least half of the undergraduate student body had to be enrolled full-time.

The composition of the undergraduate student body with respect to gender was controlled because attrition rates at single sex institutions tend to be lower (Astin, 1975, 1977). Age was controlled because students older than 24 tend to have lower retention rates (Trent & Medsker, 1968; Astin, 1975). Enrollment status was controlled because a school with more than half of its undergraduate students enrolled part-time has a smaller group of full-time students with whom freshmen can become socially integrated. It is also less likely to have an active extracurricular life which can promote social integration (Astin, 1975; Tinto, 1975; Pantages & Creedon, 1978).

In summary, this study examined the relationship between institutional characteristics and retention rates at schools that:

1. Are privately owned and operated.
2. Use traditional admissions standards (ACT, 1983) when admitting freshmen.
3. Have a liberal arts curriculum.
4. Have a total enrollment (head count of all undergraduate and graduate students enrolled full-time and part-time) not exceeding 5000.

5. Have an undergraduate student body where not more than 70% are men or women.
6. Have an undergraduate student body where at least 50% are between 18 and 22 years old.
7. Have an undergraduate student body where at least 50% are enrolled on a full-time basis.

Using institutional data reported in College Planning Search Book (ACT, 1983) and HEP Directory (Torregrosa, 1987), the authors identified the 203 schools that met all of these criteria for inclusion in the study.

The authors sent a letter to the presidents of these schools inviting them to participate in the study. The letter described the study and what data participating institutions would have to provide. Institutions choosing to participate in the study could indicate their willingness to do so by returning a self-addressed postcard that was enclosed with the letter. 161 institutions returned postcards indicating they wanted to participate in the study. This sample represented 79.3% of the population of 203 schools.

The external validity of the study was assessed by comparing the sample with the population on the following characteristics: the institutions' geographical locations, religious affiliation, enrollment, tuition, percentage of undergraduates enrolled full-time, percentage of freshmen who live on campus and percentage of freshmen who are members of a racial minority. An examination of these data revealed no significant differences between the sample and the population on these characteristics. These results therefore indicated the sample was representative of the population with respect to these institutional variables.

Administrators at the schools participating in the study were the sources of institutional data required by the study. Registrars and admissions officials verified that their schools met the criteria for inclusion in the population of institutions to be studied (control, admissions standards, curriculum, enrollment and composition of the student body with respect to sex, age and enrollment status). Registrars also provided the institutions' freshmen to sophomore retention rates. The schools' financial affairs officers provided information regarding institutional financial viability. The admissions officer supplied data about admissions/recruiting practices. The academic affairs officer was the source of information about academic/educational integration activities and the student affairs officer provided data about social integration activities.

The questionnaire used in the study included 49 items. Thomas (1988) described the questionnaire and its development. The majority of items were Likert scales ranging from "not at all," scored 1 to "to a very great extent," scored 5. The remaining items asked for factual

information such as enrollment, size of endowment, tuition, etc.

118 schools returned completed questionnaires. This represented a 73.3% rate of return for the 161 questionnaires that were mailed and 58.1% of the original population of 203 institutions.

The question of how the 118 schools differed from the 85 schools on which data were not collected arose. The researcher tested for statistically significant differences between the analyzed sample and the schools that did not provide data for the study on the same institutional characteristics that were used to compare the sample with the population. A level of significance of $p \leq .05$ was used for these tests.

A significant difference was found between the 118 schools in the analyzed sample and the 85 schools not providing data with respect to their geographical locations. The analyzed sample included a larger percentage of schools from north central and Great Lakes states than the schools for which no data were collected. The analyzed sample also included a smaller percentage of institutions from south central, south Atlantic and middle Atlantic states when compared to schools not providing data for the study.

The chi square test found a significant difference on religious affiliation when the analyzed sample was compared with the schools for which no data were collected. The analyzed sample contained a significantly higher percentage of religiously affiliated schools.

Statistically significant different differences were found between the analyzed sample and schools not providing data on the following characteristics: tuition, percentage of freshmen living on campus and percentage of freshmen who are members of a racial minority. Schools in the analyzed sample had higher tuition, a higher percentage of freshmen living on campus and a lower percentage of freshmen who were members of a racial minority when compared with the institutions for which no data were obtained. However, this bias does not influence the relationship between the model's constructs and variables. It only suggests that student retention at schools not providing data for this study may not operate precisely as the study's findings suggest.

The authors assessed three types of validity for the study's questionnaire. To ensure face validity, items were reviewed by several other researchers familiar with the content of this study. The items were also field tested with administrators at liberal arts colleges II and revised in accordance with their suggestions. Concurrent validity was assessed by factor analyzing the data obtained by the questionnaire's items. Factor analysis also enabled the authors to test a third type of validity - convergent validity. The results of this factor analysis indicated

that concurrent and convergent validity existed to a comparatively high degree in the study's questionnaire. Thomas (1988) described in detail the assessment of the validity of this study's questionnaire.

The researcher created indices measuring the constructs when two or more variables had factor loadings of .40 or higher and their reliability was found to be adequate. The researcher used the SPSS program, Reliability, to compute Cronbach's coefficient alpha (Cronbach, 1951) and test the reliability of the six indices used in this research. None of the coefficients fell below .50 which Nunnally (1967) recommends for exploratory research. The coefficient average was .68.

There is no method of testing the reliability of indicators measured by one questionnaire item. If one assumes, however, that their reliability is not systematically lower than the reliability of the six indices, then the reliability of the entire questionnaire was satisfactory, particularly for exploratory research.

The relationships in the model are recursive, i.e., are presumed to have one way causal effects. Ordinary least squares path analysis was thus appropriate and used to estimate coefficients in the model. The assumptions for multiple regression (additivity, uncorrelated error terms, homoscedasticity, normal distribution of error terms) were met with one exception. Non-linear relationships were found between the dependent variable and application yield, general education requirements and on campus living. Caution should therefore be used when interpreting the results regarding these relationships. One final assumption pertaining to both multiple regression and path analysis is that independent variables are not highly correlated. Kerlinger and Pedhazur (1973) set an upper limit of .70 for correlation between independent variables. The highest correlation between any of the independent variables was .44.

Findings

Table 2 presents the zero-order correlations and the standardized regression coefficients (beta weights) for retention rate regressed on all of the independent variables in the model. Five independent variables were statistically significant in explaining retention rate when the dependent variable was regressed on all of the independent variables. By the value of their beta weights, they were: educational and general expenditures (.28); strength of religious affiliation (.25); faculty scholarly activity (.19); alumni recruiting (.16); and on campus interviews (.14). All of these relationships and the correlations were in the direction hypothesized. These five independent variables accounted, by themselves, for 27 percent of the variance in retention rates.

Next, the authors regressed retention rate on each of the following sets of independent variables: 1) variables measuring admissions/recruiting practices; 2) variables measuring academic/educational integration activities; 3) variables measuring social integration activities. These three regressions identified seven variables as being statistically significant (alumni recruiting, faculty grant seeking, faculty scholarly activity, career exploration service use, on campus interviews, strength of religious affiliation and freshmen employment). Next, the authors regressed retention rate on these seven variables. All seven of the variables remained significant in this regression. The results for this equation are reported in Table 3.

Retention rate was then regressed on educational and general expenditures plus the seven variables listed in Table 3. The regression produced the same results that were achieved when retention was regressed on all of the independent variables. The statistically significant variables were again, by order of their beta weights: educational and general expenditures (.28); strength of religious affiliation (.25); faculty scholarly activity (.19); alumni recruiting (.16); and on campus interviews (.14). All of these relationships and the correlations were again in the direction hypothesized in the theoretical model. These five independent variables accounted for 27 percent of the variance in retention rates. Non-significant variables removed from this equation included career exploration service use, faculty grant seeking and freshmen employment. Table 4 lists the variables in this model and their beta weights and Figure 2 illustrates this model.

Figure 2 includes path coefficients. These path coefficients are the standardized regression coefficients or beta weights of the variables in the model. The path

coefficient shows the influence of each independent variable on retention rate controlling for all other variables in the regression equation. It also shows the influence of the variable, educational and general expenditures, on the variables, alumni recruiting, faculty scholarly activity, on campus interviews and strength of religious affiliation. Table 5 lists the effect of educational and general expenditures on all of the other independent variables included in the original theoretical model but not included in the Figure 2 model. Non-significant variables were not included in the Figure 2 model. Figure 2 also presents the model with path coefficients.

Discussion

The most significant difference between the model illustrated in Figure 2 and the original theoretical model is that it is far more parsimonious; it contains just five variables as opposed to the 20 that are found in the original model. One variable measuring admissions/recruiting practices (application yield) was excluded from the final model. Ten variables assessing academic/educational integration activities were removed. They were as follows: student-faculty interaction, faculty grant seeking, freshmen instructors, academic skill building services, academic advising, career exploration service use, general education requirements, orientation participation, data collection and dissemination and parent-institution interaction. Four variables (social integration, freshmen employment, on campus living and room assignment practices) were excluded from social integration activities.

The five variables in the model illustrated in Figure 2 (educational and general expenditures, alumni recruiting, faculty scholarly activity, on campus interviews and strength of religious affiliation), influenced retention rate in the direction hypothesized in the original theoretical model. Educational and general expenditures also had a significant effect on faculty scholarly activity and on campus interviews as hypothesized.

The total causal effects are equal to the sum of the direct and the indirect effects (Kerlinger & Pedhazur, 1973). The total causal effects were used to rank the importance of the variables in explaining variance in retention rates. Table 6 presents the direct, indirect and total causal effects which the independent variables in the model had on retention rate. This table also lists the rank order of importance of these variables.

The variables, ranked by the value of their total causal effects on retention, were as follows: educational and general expenditures (.35); strength of religious

Table 2. Retention explained by the independent variables.

Variables	Zero-Order Correlation	Standardized Regression Coefficient
Educational and general expenditures	.36	.28*
Application yield	-.05	-.02
Alumni recruiting	.25	.16*
Student-faculty interaction	.04	.003
Faculty grant seeking	.25	.11
Faculty scholarly activity	.28	.19*
Freshmen instructors	-.10	-.004
Academic skill building services	.03	-.04
Academic advising	-.04	-.05
Career exploration service use	-.03	-.14
On campus interviews	.26	.14*
General education requirements	.01	.03
Orientation participation	-.12	-.11
Data collection and dissemination	-.04	-.12
Parent-institution interaction	.18	.03
Social integration	.15	.07
Strength of religious affiliation	.29	.25*
On campus living	.07	.06
Room assignment practices	.06	-.001
Freshmen employment	-.20	-.12

$R^2 = .30$ Adj. $R^2 = .27$ $F = 9.61^*$ df (5,112) N = 118
$p \leq .05$

Table 3. Retention explained by significant admissions/ recruiting practices, academic/educational integration activities and social integration activities variables.

Variables	Standardized Regression Coefficient
Career exploration service use	-.16*
Religious affiliation	.21*
Faculty scholarly activity	.19*
Freshmen employment	-.15*
Alumni recruiting	.21*
Faculty grant seeking	.18*
On campus interviews	.23*

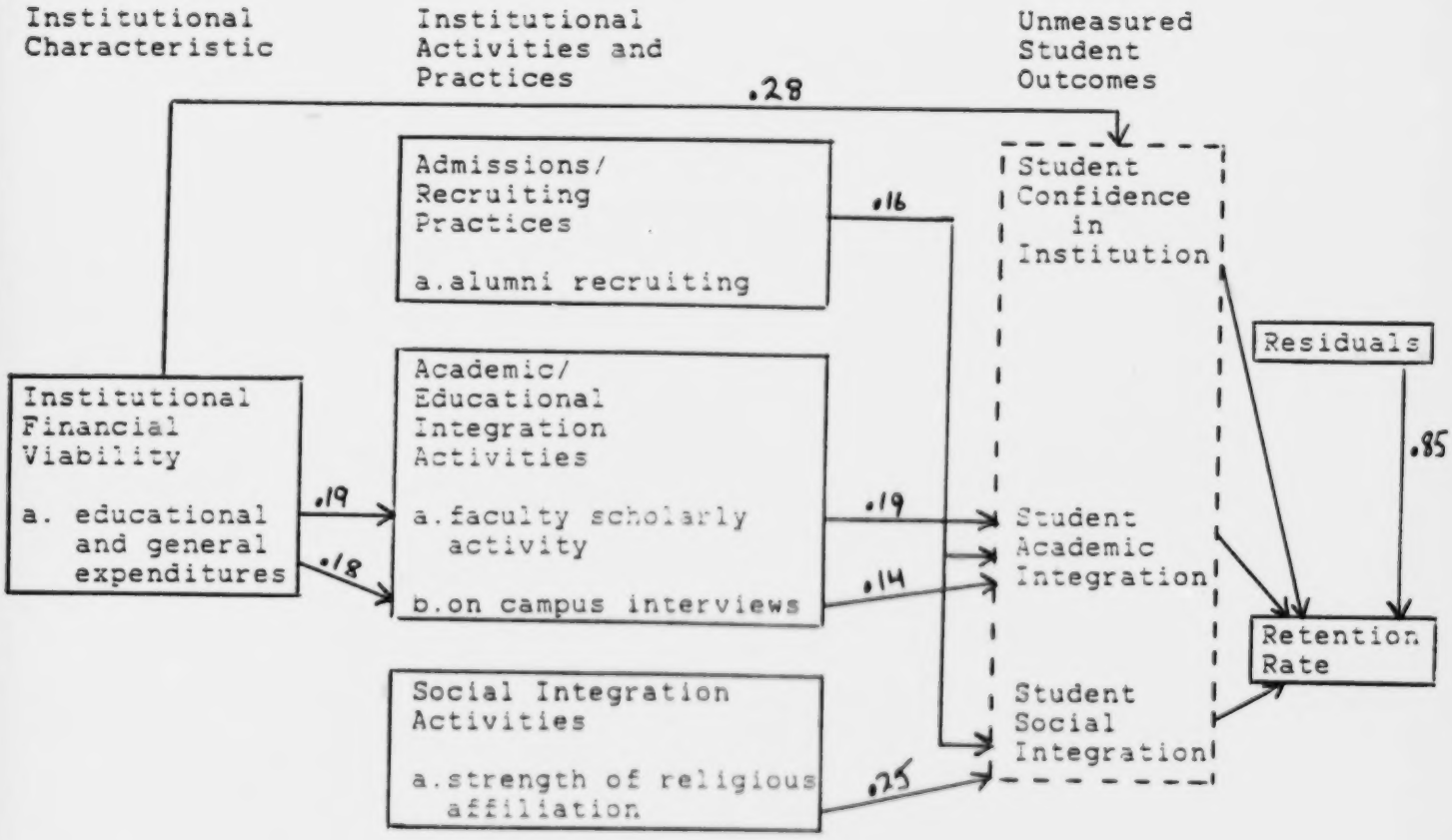
R^2 = .30 Adj. R^2 = .26 F = 6.75* df (7,110) N = 118
$p \leq .05$

Table 4. Retention explained by significant admissions/recruiting, academic/educational integration, social integration activities variables and educational and general expenditures.

Variables	Standardized Regression Coefficient
Educational and general expenditures	.28*
Alumni recruiting	.16*
Faculty scholarly activity	.19*
Faculty grant seeking	.17
Career exploration service use	-.03
On campus interviews	.14*
Strength of religious affiliation	.25*
Freshmen employment	-.15

$R^2 = .30$ Adj. $R^2 = .27$ $F = 9.61^*$ df (5,112) N = 118
$p \leq .05$

FIGURE 2. Path diagram for final theoretical model as measured by retention rate.



$R^2 = .30$ Adj. $R^2 = .27$
Significant at $p \leq .05$

Table 5. Independent variables explained by educational and general expenditures.

Variable	Standardized Regression Coefficient for Educational and General Expenditures
Application yield	-.19*
Alumni recruiting[a]	.13
Student-faculty interaction	-.10
Faculty grant seeking	.15
Faculty scholarly activity[a]	.19*
Freshmen instructors	-.14
Academic skill building services	.06
Academic advising	.07
Career exploration service use	-.04
On campus interviews[a]	.18*
General education requirements	.08
Orientation participation	.04
Data collection and dissemination	.008
Parent-institution interaction	.10
Social integration	-.03
Freshmen employment	-.16
Strength of religious affiliation[a]	.01
On campus living	-.01
Room assignment practices	-.07

[a] significant variable in the final model

* significant direct effect of educational and general expenditures on variable

Table 6. Causal Effects of Variables in the Final Model.

Variable	Causal Effects: Direct	Indirect	Total Causal	Causal Rank
Educational and general expenditures	.28	.07[a]	.35	1
Strength of religious affiliation	.25	___	.25	2
Faculty scholarly activity	.19	___	.19	3
Alumni recruiting	.16	___	.16	4
On campus interviews	.14	___	.14	5

[a] through faculty scholarly activity and on campus interviews.

affiliation (.25); faculty scholarly activity (.19); alumni recruiting (.16); and on campus interviews (.14). The two indirect effects were educational and general expenditures through faculty scholarly activity (.04) and educational and general expenditures through (.03). Thus five variables were significant in predicting retention in the final model.

Several comments about how the model functioned in this study seem appropriate. First, the measure of financial viability was, as hypothesized, the most important determinant in the model. It worked in two ways to increase retention: directly and indirectly by increasing the level of two institutional activities that enhance retention. It is believed that financial viability engenders student confidence in the institution and this confidence, in turn, enhances student persistence at the school. It has the additional effect of increasing the extent to which faculty are involved in scholarly activity and prospective employer and graduate/ professional school representatives come to the campus to interview students.

The finding regarding financial viability was the most significant of this study. It is particularly significant because nearly all previous studies of the relationship between various institutional practices and retention have focused on programs and services which are intended to directly affect student academic and social integration and ultimately persistence (Pantages & Creedon, 1978; Lenning, Beal & Sauer, 1980; Noel, Levitz, & Saluri, 1985). Very few studies have given attention to how a basic institutional characteristic such as financial viability can influence student attitudes about their persistence at particular schools.

The most notable feature of this variable is that the preponderance of its effect on retention is direct. Educational and general expenditures had a significant direct effect on only three of the other variables in the model (application yield, faculty scholarly activity and on campus interviews). It is believed that the direct effect on retention is present because financial viability, as measured by educational and general expenditures, engenders student confidence in the institution. If students see that the school is financially stable or even thriving, they are more likely to perceive it as a healthy institution, one that is permanent and stable. This perception in turn leads them to have confidence in it and choose to persist in their education there. Conversely, institutional financial problems that lead to faculty reductions or poorly maintained facilities undermine student confidence in the school. This lack of confidence reduces student retention.

Educational and general expenditures did have an indirect effect on retention through faculty scholarly activity and on campus interviews. A larger budget may make it easier for an institution to financially support faculty research through equipment, facilities and grants. It may also enable an institution to hire more faculty so that their teaching and advising loads are reduced and more time is available for research.

Strength of religious affiliation was the second most important variable in predicting retention in the final model. It is believed that strength of religious affiliation is an important determinant of retention because the religious affiliation of an institution can help build a sense of common values and community on a campus into which students can be more easily socially integrated. It is also possible that this variable may influence a student's choice about which institution s/he wishes to attend and thus help to insure an appropriate fit between the student and the school.

Faculty scholarly activity was the third most important predictor of retention rate. This finding is a particularly interesting one and stands in stark contrast to recommendations of previous researchers on the dangers to retention when an institution emphasizes faculty scholarly activity as opposed to teaching effectiveness (Jose, 1978; Astin & Scherrei, 1980; Beal & Noel, 1980). A possible explanation for this finding is that most liberal arts colleges II stress the importance of undergraduate teaching. The schools that stress both instructional effectiveness and research, however, have the additional advantage of having faculty whose scholarly work as well as teaching effectiveness inspires the confidence of students in the quality of their education. Another possible explanation is that the environment of a small liberal arts college may result in faculty discussing their research with students and perhaps even involving some of them in it. Such discussions could promote the academic integration of students and ultimately their retention.

Alumni recruiting was the fourth most important variable in predicting retention. This finding was consistent with the theory of Starr, Betz and Menne (1972) which states that congruence between student background and institutional values and opportunities enhances retention. It is believed that alumni recruiting contributed to retention because the experience these people have with the institution makes it more likely they will recruit students whose educational and personal backgrounds are congruent with the opportunities and values of the school.

On campus interviews was the fifth most significant predictor of retention in the final model. It is believed

that this variable contributes to retention because the presence on campus of representatives of graduate/professional schools and prospective employers contributes to the student perception that their education is both practical in value and of high quality.

It is important to note that fifteen variables measuring institutional activities designed to facilitate student academic and social integration did not prove to be significant predictors of retention. This was the most surprising finding of the study.

To summarize, there were six major findings in this study. First, the theoretical model was useful in analyzing the process through which institutional variables affect retention rate. In general, the findings support the claim that the structure of the model worked as expected. Financial viability had a direct effect on retention. It also had indirect effects through at least two of the institutional activities designed to enhance retention. Moreover, four variables other than the one measuring financial viability had their own direct effects on retention. The significant determinants of the model accounted for 27 per cent of the variance in retention rates. This adjusted R squared compares favorably with the attrition studies in which the student, rather than the institution, was the unit of analysis: Bayer (1968) (R squared=.12); Panos and Astin (1968) (R squared=.09); Wegner and Sewell (1970) (R squared=.09); Mehra (1973) (R squared=.05); Bean (1980) (R squared=.27); Pascarella and Chapman (1983) (R squared=.26); Pascarella and Terenzini (1983) (R squared=.23). Spady (1971) had a comparatively high unadjusted R squared in predicting freshmen attrition with for men (.31) and women (.39). Again, the unit of analysis in Spady's study (1971) was the student.

However, it seems reasonable to make two conclusions at this point: 1) Although the basic structure of the model tested in this study appears to useful for future inquiry into the institutional determinants of retention, individual variables in the model may need to be dropped and new ones added; 2) the measures of the variables employed in this study may need to be changed.

Second, the most important determinant of retention was institutional financial viability as measured by educational and general expenditures. The preponderance of the effect of this variable on retention was direct.

Third, institutional financial viability had a significant indirect effect on retention through only two of the 12 variables in the model it was hypothesized to influence. Ten of the 12 institutional variables hypothesized to enhance retention were not affected by the size of the institutions' educational and general expenditures.

Fourth, the next most important variables in explaining retention rate were, by order of their significance, strength of religious affiliation, faculty scholarly activity, alumni recruiting and on campus interviews.

Fifth, only five of the theoretical model's 20 variables, all of which have been frequently cited in student retention research and literature as important determinants of retention, proved to be significant predictors of persistence in this study. There are several possible explanations for this unexpected finding. Three points should be made regarding this finding. First, the perceptions of institutional administrators on the extent to which the variables were present on the campuses may not have been a valid and reliable measure of these variables. Other more objective measures of the variables may be more accurate and valid. A second possible explanation is that differences between the sample used for this study and the samples used in previous research may account for differences in findings.

A third explanation may offer the best accounting for this finding. Almost all previous retention studies have made the student, rather than the institution, the unit of analysis. Researchers have then taken the results of these studies and inferred that certain institutional practices would increase retention. These inferences have thus formed the basis of their recommendations for school practices.

However, one student's decision to persist or withdraw from school is a complex one that is influenced by many variables. Analyzing those decisions for a large group of students is even more difficult because the number of variables increases. Drawing valid conclusions about desirable institutional practices from data on students may therefore be very difficult. On the other hand, studies in which the institution is the unit of analysis may lead to different and more accurate conclusions about desirable school practices than inferences drawn from studies in which the student is analyzed.

Recommendation for Future Research and Implications for Practice

Five recommendations are made for future research and discussed below:

1) The nature of the relationship between financial viability and retention should be examined further. The precise way in which financial viability contributes to student retention should be explored. This researcher's hypothesis that financial viability engenders student confidence in the permanence and stability of the institution should be tested.

2) It was assumed in this research that different institutional activities had direct effects upon the unmeasured student outcomes, academic and social integration. This assumption should be tested in future research.

3) The theoretical model should be tested using other measures of student retention at other types of institutions. For example, the model could be tested as a predictor of the graduation rate for a class of entering freshmen four of five years after its members first enroll. Furthermore, it could be tested at larger private institutions, public schools with larger or even similar enrollments or schools that emphasize research more and teaching less than liberal arts colleges II.

4) The primary support for testing this study's hypotheses regarding alumni recruiting, faculty scholarly activity and on campus interviews came from the interviews conducted with students, faculty and administrators at a liberal arts II institution with a freshmen to sophomore

retention rate above the national average for comparable schools. These three variables were three of the five variables that were significant predictors of retention in the final model. Researchers may find such interviews to be helpful in selecting variables to study in future retention studies.

5) The structure of the model and the methodology employed to test it in this study should guide future retention research in which the institution is the unit of analysis. Variables in the model may be added or deleted but the model itself should be retained for future research.

It is important to note that the model tested in this study did not account for 73 per cent of the variance in retention rate. An important task for future studies, therefore, will be identifying the missing determinants of retention.

The following practical implications are based on the results of this study and should be considered at similar institutions:

1) Institutional financial viability was clearly the most important determinant of retention in this study. It is recommended, therefore, that liberal arts colleges II interested in improving their retention rates examine their financial condition, how the condition is manifested in tangible ways on campus and the effect these conditions are having on student perceptions of the school.

2) If a school is affiliated with a religious organization and has an institutional mission that is compatible with this affiliation, it should make full use of the ties to the religious organization in identifying and recruiting prospective students and sponsoring on campus religious activities.

3) It is recommended that liberal arts colleges II encourage their faculty to be involved in scholarly work and research. It is also recommended that institutions make student students aware of this activity by creating opportunities on campus for faculty to discuss their scholarly work and publishing promotional materials for prospective students that emphasize this part of the faculty's work.

4) Liberal arts colleges II should do all they can to provide students with on campus opportunities for students to interview with representatives of prospective employers and graduate/professional schools.

5) Liberal arts colleges II should enlist the help of their alumni in identifying and recruiting prospective students. The knowledge and relationship these individuals have vis a vis their undergraduate institution can enable them to help the school recruit students whose educational and personal backgrounds are compatible with the opportunities and values of the school. This

compatibility can, in turn, promote student retention.

6) A surprising finding of this study was that seven institutional variables frequently cited in student retention research and/or recommendations for steps schools can take to improve their retention rates did not prove to be significant predictors of retention at liberal arts colleges II. Therefore, the effectiveness of these variables in reducing student attrition should be re-considered.

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